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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,209	04/10/2006	Thomas Pfeiffer	13779-62	6889
45473	7590	10/02/2009		
BRINKS, HOFER, GILSON & LIONE P.O. BOX 1340 MORRISVILLE, NC 27560			EXAMINER	PAK, JOHN D
			ART UNIT	PAPER NUMBER
			1616	
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			10/02/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/575,209	<b>Applicant(s)</b> PFEIFFER ET AL.
	<b>Examiner</b> John Pak	<b>Art Unit</b> 1616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 13-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 13-29 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date 2/13/07
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_

Claims 13-29 are pending in this application.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Batarseh et al. (US 6,242,009) and Batarseh et al. (US 6,939,566) in view of Jain et al.

Batarseh et al. ('009) disclose combining a **metal salt** compound and an organic chelating moiety that can complex with the metal such as an amino acid or other amines (column 2, lines 47-64; column 3, lines 11-33; paragraph bridging columns 3-4; claims 1-8, 11-2, 14-15, 17-19, 28). **Lysine** is a preferred amino acid chelating agent, as is histidine and arginine (3 of the 12 amino acids in claim 5; column 3, lines 35-43); **Copper** is a preferred metal (1 of 3 metals in claim 2; column 2, lines 44-54). For bivalent metals such as copper, "at least twice as much" in molar amount is disclosed for the amino acid (column 4, 46-49). Mixture of the amino acids is disclosed (claims 5, 19; column 3, lines 34-43). The "organic complexes can penetrate the protective biofilms of germs and other microorganisms" such as **fungi** so that the metal ion can exhibit its biocidal effect on the microorganisms (column 2, lines 53-58; column 4, lines 43-45). Use of other disinfectants is disclosed (claim s11-12; paragraph bridging columns 2-3). Direct use or use after dilution is disclosed (column 3, lines 5-10); concentration of 0.001 to 10% by volume is disclosed (claim 8). Application to a

material or product by spraying, brushing, dipping, and other techniques is disclosed (column 4, lines 24-42).

Batarseh et al. ('566) provide substantially similar disclosure as Batarseh et al. ('009). See from column 2, line 45 to column 6, line 30; claims 1-3, 5-10, 13-14, 16-26. Batarseh et al. ('566) provide the additional teaching that the metal complex, e.g. complex of copper and lysine, can be used to protect living flowers and plants (claim 26; column 6, lines 14-30) as well as cut flowers and plants (claims 22-24).

Jain et al. disclose copper chelate of L-lysine as having antifungal properties (pages 51-52). Samples diluted with large amount of water were tested (page 52, left column).

The two primary references by Batarseh et al. do not **explicitly** disclose a specific example of adding copper to lysine to prepare a fungicide. However, the references clearly disclose the selection of copper (one of only three metals, *supra*) and selection of lysine (preferred). The specific selection of copper and lysine would thus have been fairly suggested by the teachings of the primary references as discussed above and also from the specific teaching of antifungal properties of copper-lysine complex by Jain et al. (pages 51-52).

The two primary references also do not explicitly state in verbatim language that the fungicidal action of the copper is increased by adding the lysine. However, the references clearly teach that forming the organic complex allows the complex to better penetrate the microorganisms so that the metal can exert its biocidal effect. One of ordinary skill in the art would thus have expected increased activity, as claimed herein.

Various claims recite ratios of copper to lysine. All of the claimed ratios are taught by the two primary references because the references disclose, on a molar basis, at least 2:1 of amino acid to metal. For copper (atomic weight 63.55) and lysine (molecular weight 146.19), on a weight basis, this calculates to Cu:lysine = about 1:4.6.

Several dependent claims require 1-10 molar equivalents, based on copper, of a basic nitrogen compound. It is noted in this regard that the two primary references teach other amino acids that can be used in mixture with lysine. Arginine and histidine are basic nitrogen compounds, and they can be used with lysine to complex with copper. Since the amino acids are present "at least" in 2:1 molar amount to copper, use of at least 1 molar equivalent of arginine or histidine to copper would have been obvious. Use of such basic compounds would have led to the predictable result of complexing with copper to provide better penetration.

Use of at least one other fungicidal active ingredient is not only expressly suggested by the primary references, it would also have been obvious for the purpose of obtaining better fungicidal control by taking advantage of multiple ingredients and their diverse efficacies. In re Kerkhoven, 205 USPQ 1069, 1072 (CCPA 1980); In re Crockett, 126 USPQ 186 (CCPA); Ex parte The NutraSweet Co., 19 USPQ2d 1586, 1587 (Bd. Pat. App. & Int. 1991).

Dilution with water is expressly taught by Batarseh et al., so use of a "solvent" is taught (see e.g. Batarseh '009, paragraph bridging columns 3-4; Batarseh '566, column 4, lines 40-64).

Claim 22 recites features (v')(a) to (v')(d), which read on treating a particular substrate formulation with the inventive copper and/or basic amino acids. The two primary references teach that the amino acids aid in the penetration of the biocidal metal such as copper into the microorganisms. Therefore, these steps are obvious steps that would have led to predictable results of improved biocidal activity of metals (e.g. copper) from the teachings of the primary references.

Therefore, the claimed invention, as a whole, would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, because every element of the invention and the claimed invention as a whole have been fairly disclosed or suggested by the teachings of the cited references.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Batarseh et al. (US 6,242,009) and Batarseh et al. (US 6,939,566) in view of Jain et al. and Klittich et al. (US 2001/0004460).

Teachings of all references except for Klittich et al. have been thoroughly discussed above and the discussion there is incorporated herein to avoid repetition. In sum, these references teach and suggest a copper/lysine mixture as fungicides and disinfectants for wide variety of materials, including plants and cut plants.

Klittich et al. further teach that copper fungicides are known to be used to treat or coat seeds (paragraphs 19, 23-24, 85; claim 22). Generally, the fungicides can be applied to the seed between 2 to about 1000 g/quintal of seed, which is equal to 0.002 to 1 kg/100 kg of seed.

Even though the two primary references by Batarseh et al. do not expressly disclose treating seeds with the copper lysine complex, one of ordinary skill in the art would have been motivated to do so from the previously known use of other copper fungicides for seed treatment/coating. The claimed 0.1 to 2.5 kg/100kg seed would have been obvious from the known general amount range of fungicides, including copper fungicides. Use of such amount would have led to predictable results.

Therefore, the claimed invention, as a whole, would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, because every element of the invention and the claimed invention as a whole have been fairly disclosed or suggested by the teachings of the cited references.

Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Batarseh et al. (US 6,242,009) and Batarseh et al. (US 6,939,566) in view of Jain et al. and Leach et al. (US 4,622,248).

Teachings of all references except for Leach et al. have been thoroughly discussed above and the discussion there is incorporated herein to avoid repetition. In sum, these references teach and suggest a copper/lysine mixture as fungicides and disinfectants for wide variety of materials.

Leach et al. disclose impregnating pine sapwood stakes with various copper preservative salts and field tested in Florida for decay and termite damage (Example 13 on columns 9-10). 0.43 lb/ft<sup>3</sup> application rate provided good control (Table 1). This application rate is equal to about 2.1 kg/m<sup>3</sup>.

Even though the two primary references by Batarseh et al. do not expressly disclose treating timber or other materials so that they comprise 0.0001 to 2 kg/m<sup>3</sup>, such application rate would have been obvious to the ordinary skilled artisan. The primary references teach effective application and concentration levels. Leach et al. disclose wood impregnation level that is close to the top end of applicant's range, but it must be noted that Leach's level is from the use of copper wood preservatives alone. When other wood preserving active agents are used in combination with copper, use of smaller quantity would have been expected and obvious. Also, the primary references teach that the copper lysine complex allows for better penetration into the microorganisms. Improved penetration and activity would have made it obvious to use less application amounts. Moreover, quantity of application amount depends on the nature and intended use of the timber or "material." For example, timber intended for indoor use may only need light application for temporary protection during storage and handling. Timber intended for Florida outdoor usage would require more protection and thus higher application amount. A food material would need/require much smaller application amount than timber. One of ordinary skill in the art would have been able to adjust the amounts to correspond to the substrate and microbicidal protection needed.

Therefore, the claimed invention, as a whole, would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, because every element of the invention and the claimed invention as a whole have been fairly disclosed or suggested by the teachings of the cited references.

For these reasons, all claims must be rejected.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to JOHN PAK whose telephone number is **(571)272-0620**. The Examiner can normally be reached on Monday to Friday from 8 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's SPE, Johann Richter, can be reached on **(571)272-0646**.

The fax phone number for the organization where this application or proceeding is assigned is **(571)273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is **(571)272-1600**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/John Pak/  
Primary Examiner, Art Unit 1616